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Fig. 4. p. 499.

1 ped. 2

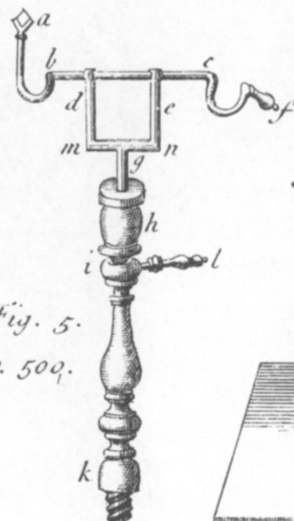


Fig. 5. p. 500.

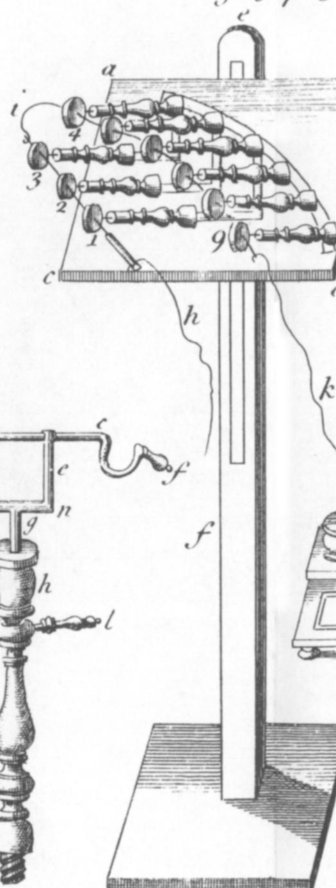


Fig. 3. p. 501.

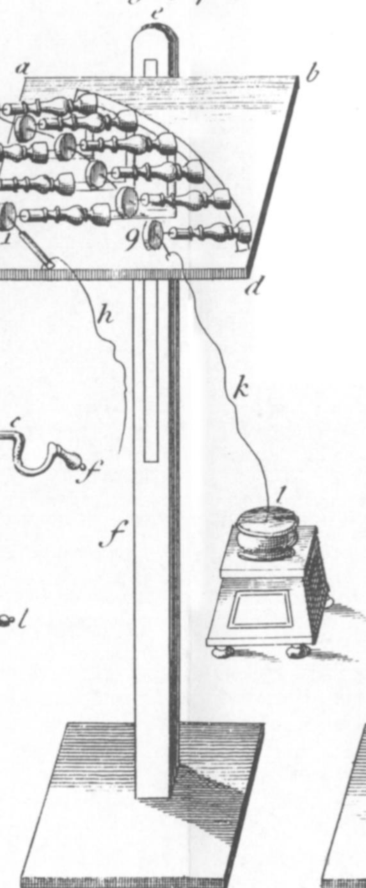


Fig. 2. p. 498.

a b c d e f g h i

Fig. 1. p. 498.



1 1 2 ped.

J. Mynde sc.

XVI. *Epiſtola* Jo. Henrici Winkleri, *Prof.* Lipſ. & *R. S.* Lond. *S. ad* Societatem Regalem Londinenſem *data, quæ continet Deſcriptionem & Figuras* Pyrorgani *ſui* Electrici.

Præſes Illuſtriſſime,
Viri Illuſtriſſimi,

Read May 7. 1747.

FACTA in Societatem veſtram ſplendidiſſimam mei cooptatione adeo præclarum munus mihi impertiviſtis, ut in agendis ejus partibus omnem vim ac operam adhibendam mihi eſſe videam. Cum enim ex veſtra Societate per quamplurimos annos opera et ſcripta prodierint, quibus et propter rerum dignitatem, et propter auctorum celebritatem, et propter doctrinæ excellentiam, memoria perpetua conſtabit; facile intelligo quam arduum opus ſit, quod inter viros, quorum fama univerſum literarum orbem peragravit, mihi ſuſcipiendum eſt. Attamen vires animus colligit. Cum enim duobus abhinc annis ex primo meo de electricitatis natura libello ſcintillularum electricarum, quibus ſpiritus vini incenditur, præcipua phænomena in tranſactiones veſtras deſcripta inferri curaveritis, Viri Illuſtriſſimi; in eam adductus ſum opinionem, fore, ut futura etiam opera mea, in qua continuanda non deſiſtam, aliquid efficiatur, quod non diſpliceat. In præſenti vobis, Illuſtriſſime Præſes, Viri Illuſtriſſimi, pro eximio, quo me ornâſtis, beneficio grates ago immortales, meque, quoad potero, exquirendis naturæ

viribus

viribus studium impensurum esse indefessum, et, si mihi obvenerit, quod notatu dignum videatur, hoc ad vos perscripturum esse polliceor. In libello *Germanico*, in quo anno superiori experimentum *Muschenbroekianum* explicaturus virium electricarum augmentum in vasis vitreis descripsi, § 30, organi alicujus, quo plures scintillæ simul oriundæ crepitant, mentionem injeci.

Hujus *Pyrorgani Electrici*, ut voco, imaginem, in figuris æneis dicti libelli non delineatam, in præsenti exhibeo TAB. IV. *Fig.* 2. Per medium annulum metallicum *ab* (*Fig.* 1.) pice repletum, cylindrulus metallicus *cd* infixus est. Annulum diameter unum pollicem *Parisinum* et quatuor lineas æquat. Cylindrulus utrinque ad distantiam unius pollicis prominet. Diameter annuli minor esse haud debet, ne cum cylindrulo communicata electricitas, si ad annulum metallicum pertingat, imminuatur. Ferrumine adjuncta est annulo *ab* furca metallica, cujus stylus cochleatus inditus est cylindro ligneo *ef*, (*Fig.* 1.) cujus extremitas inferior *f* ita formata est, ut per asseris alicujus fissuram pervadens huc illuc moveri, et ope cochleæ firmari queat. Ejusmodi cylindrum metallicum pici, qua annulus repletus est, infixum cum stylo cochleato, compendii causa, simpliciter *cylindrum electricum* nomino (*Fig.* 1.). Ex quatuor hujusmodi cylindris electricis pyrorganum electricum, *Fig.* 2. expressum, constat. Cylindri ita ponuntur, ut inter se habeant intervallum ad gignendas scintillas electricas sufficiens. Eas vero excitaturus pyrorganum juxta aliquod metallum *ab* ex filis sericis suspensum firmatumque ita colloco, ut inter metallum et cylindrum *c*, intervallum necessarium intersit. Ultimo cylindro *fg* in *g* alligo filum metallicum *h* in vas metallicum aqua plenum *i* pertingens. His ita ordinatis, simulac

metallum

metallum oblongum *ab* electricitate donatur, in quatuor intervallis ſcintillæ electricæ emicant tanto clarius ſplendentes, quanto majorem electricitatem communicant rotati frictique globi vitrei.

Ex quo libellus nominatus in lucem prodiit, duo ejuſmodi pyrorgana electrica conſtruxi, quorum alterum formam rotæ alatæ habet, alterum ſcintillis emicantibus ſeptemtriones repræſentant.

Rotæ alatæ conſtructio, quam Tab. IV. *Fig.* 4. delineari curavi, eſt ſequens. Orbi ligneo cavato ſeu annulo ligneo *dddd* ſex alæ ligneæ *cd* infixæ ſunt. Totius annuli cum foramine diameter 13 digitos, et foraminis rotundi diameter 6 digitos complectitur. Alæ *cd*, quarum longitudo decem digitos comprehendit, fiſſuras habent, in quibus tres cylindri electrici hinc illinc moveri et firmari poſſunt. Prope alas infixas in annulo *dddd* foramina angulata formata ſunt, in quibus ſingulis itidem cylindrus electricus ſtatuitur. Itaque in rota alata ſex ordines apparent, qui ſinguli quatuor cylindris electricis conſtant, obſervatis inter ipſos intervallis, quæ ad excitandas ſcintillas electricas proſunt. In cujuſvis alæ extremitate *c* firmatur inſtrumentum metallicum *gf*, conſtans tribus partibus, quarum extremæ ad angulum rectum mediæ *g* junctæ ſunt.

Ut vero inſtrumenta iſta metallica rite applicari queant, in latere ad finem *c* alæ poſtico (anticum enim nomino, in quo cylindri electrici ſcintillant) fibula metallica affixa inter ſe et latus alæ poſticum aliquod intervallum relinquit. Media fibula inſtructa eſt cochlea verſatili *g*. Dicto intervallo pars brevior inſtrumenti metallici inditur. Pars altera extrema *h* cylindro quarto propinqua eſt; tantum vero ab eodem

 diſtat,

diſtat, quantum debet, ſi inter iſtam inſtrumenti partem et cylindrum ſcintilla electrica excitanda eſt. Hinc pars altera brevior ſub fibula pro lubitu moveri et firmari poteſt. Fibulis applicatum eſt et in partibus poſticis alarum circumductum filum metallicum *ik*, cui, quando ſcintillæ electricæ ſuſcitandæ ſunt, in loco *x* aliud metallum *y* adjungitur in vas metallicum *s* aqua plenum pertingens. Electricitas, ſimulac cum cylindro primo communicatur, ad omnes cylindros tranſit.

Hinc neceſſe eſt, ut, ſi ſcintillæ exoriri debeant, inſtrumenta metallica deſcripta *gf* ſemper libera et vacua maneant electricitate. Quod fit metallo *y*, quod filo metallico *ik* adjunctum eſt, electricitatem in aquam propagante. Inter duo enim corpora æquali prædita electricitate nulla exiſtit ſcintilla. Cum primo autem cylindro electricitas communicatur a malleo metallico *a* affixo axi metallico *bc*, qui in foraminibus rotundis duarum columnarum *de* lignearum verſari poteſt præditus manubrio *f*. Hujus mallei apparatum *Fig*. 5. oſtendit.

Columnæ *de Fig*. 5. ligno *mn* inſiſtunt, quod ſtylum *g* habet infixum operculo, quod vas vitreum *h* pice cum eodem copulatum tegit. Hoc vaſe vitreo ideo opus eſt, ut electricitas axi metallico *bc* ope alicujus fili metallici appenſi data conſervetur.

Vaſis vitrei *h* fundus ope picis junctus eſt cum ligno, cui ſtylus adjunctus eſt, qui foramini longiori columnæ *ik* ita inſeri poteſt, ut cochleæ *l* ope firmari queat, poſtquam vas vitreum debitam altitudinem nactum eſt. Hæc vero debet eſſe altitudo, ut axis *bc* in foramine annuli lignei *dddd* medium teneat. Cylindri autem electrici in annulo et alis *cd*

ita

ita collocandi ſunt, ut malleus a quocunque cylindro electrico primo, ad quem accedit, et cylindri a ſe invicem ſufficientem ſcintillis electricis excitandis diſtantiam habeant.

In baſi quadrata *mnop*, *Fig.* 4. in qua columna *ik* inſiſtit, fiſſura eſt, in qua, quando malleus *a* ſatis per foramen annuli *dddd* prominet, columna *ik* cochlea ſtabilitur. Annulo *dddd* furca metallica applicata eſt infixa columnæ ligneæ *qr*, quæ ſimiliter in fiſſura baſis quadratæ *mnop* firma redditur. Axis metallicus *bc* per medium annuli foramen protenſus a baſi quadrata per altitudinem 21 digitorum abeſt. Quando igitur, axe *bc* electricitatem nacto, malleus alicui cylindro electrico primo appropinquat, quinque ſcintillæ ſecundum ſeriem rectam uno fere tempore exoriuntur.

Verſo itaque ſenſim axe *bc*, ordines iſti ſcintillarum per circulum in conſpectum prodeunt. Scintillæ adeo claræ ſunt, ut in luce diurna ad centum pedes videantur. Homo qui axem manubrio verſat, ne electricitatem diſſipet atque perdat, ſtare debet in materia electricitatem non propagante.

Electricos Septemtriones, Tab. IV. *Fig.* 3. exhibet. In tabula *abcd*, quæ in columnæ *ef* fiſſura elevari et demitti poteſt, novem cylindri electrici ita collocari poſſunt, ut ſeptem ſcintillæ eo ordine ſimul appareant, quo ipſi Septemtriones in cœlo nocte ſerena micant. Cylindro metallico primo eo tempore, quo exiſtere debent ſcintillationes, adjungitur filum metallicum *h*, cui electricitas traditur. In tertii et quarti extremitatibus filum inflexum metallicum *i* annectitur, ut electricitas ad quintum et reliquos cylindros permeare valeat. Cylindro nono filum metallicum *k* applicatur in aquam in vaſe metallico *l* productum, quo

 electricitas

electricitas omnibus cylindris tributa in materiam, quæ eandem haud conservat, quantum opus est, propagetur.

Hæc quanquam nonnisi ad delectandos oculos spectare videantur, attamen vobis, Illustrissime Præses, Viri Illustrissimi, qui in ejusmodi delectamentis electricis vim naturæ mirabilem latere perspicitis, haud ingrata fore confido. Qua spe fretus, vestro omnium favori, quem impense veneror, me submisse commendo.

Scribebam *Lipsiæ*,
die 31 *Martii*,
1747.

XVII. *Some Observations upon* Gems *or* Precious Stones; *more particularly such as the Ancients used to engrave upon, by* Robert Dingley, *Esq*;.

Read May 7. 1747.

GEMS or precious Stones, of all Species, are sometimes found of regular Shapes, and with a natural Polish; and sometimes of irregular Shapes, and with a rough Coat. The first Sort may be consider'd as of the Pebble-Kind; and they are said to be found near the Beds of Rivers, after great Rains: The others are found in Mines, and in the Clefts of Rocks.

The Gems of the first Sort were what the Ancients most usually engraved upon: These are commonly called *Intaglio's*; and they are mostly of a long oval Figure, inclining to a Point at each End, convex as well on the engraved Face, as on the others, with a Ridge